

**WHAT IS CLAIMED IS:**

1. A nonaerosol/atomizer pump or aerosol dispenser which comprises (A) a reservoir confining at least one vaporizable sunscreen composition suited for UV-  
5 photoprotecting the skin and/or hair against the damaging effects of UV radiation, said at least one vaporizable sunscreen composition comprising (1) a UV-  
photoprotecting amount of at least one UV-sunscreen and (2) an SPF-enhancing amount of generally spherical silica microparticles, formulated into (3) a topically applicable, cosmetically acceptable carrier therefor, and (B) at least one agent for  
10 pressurizing said at least one vaporizable sunscreen composition into a spray of fine sunscreen particles.
2. The atomizer/aerosol dispenser as defined by Claim 1, said at least one vaporizable sunscreen composition comprising (2) an SPF-enhancing amount of  
15 generally spherical porous silica microparticles, formulated into (3) a topically applicable, cosmetically acceptable aqueous carrier therefor.
3. The atomizer/aerosol dispenser as defined by Claim 2, said generally spherical porous silica microparticles having a mean particle size ranging from  
20 0.5  $\mu\text{m}$  to 20  $\mu\text{m}$ .
4. The atomizer/aerosol dispenser as defined by Claim 3, said generally spherical porous silica microparticles having a mean particle size ranging from  
3  $\mu\text{m}$  to 15  $\mu\text{m}$ .  
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5. The atomizer/aerosol dispenser as defined by Claim 3, said generally spherical porous silica microparticles having a specific surface ranging from  
50  $\text{m}^2/\text{g}$  to 1000  $\text{m}^2/\text{g}$

6. The atomizer/aerosol dispenser as defined by Claim 5, said generally spherical porous silica microparticles having a specific surface ranging from 150 m<sup>2</sup>/g to 800 m<sup>2</sup>/g.
- 5 7. The atomizer/aerosol dispenser as defined by Claim 5, said generally spherical porous silica microparticles having a specific pore volume ranging from 0.5 ml/g to 5 ml/g.
8. The atomizer/aerosol dispenser as defined by Claim 7, said generally  
10 spherical porous silica microparticles having a specific pore volume ranging from 1 ml/g to 2 ml/g.
9. The atomizer/aerosol dispenser as defined by Claim 2, said generally spherical porous silica microparticles comprising from 0.1 % to 10 % weight of  
15 said at least one vaporizable sunscreen composition.
10. The atomizer/aerosol dispenser as defined by Claim 2, said generally spherical porous silica microparticles comprising from 0.2 % to 5 % weight of said at least one vaporizable sunscreen composition.
- 20 11. The atomizer/aerosol dispenser as defined by Claim 2, said at least one vaporizable sunscreen composition comprising one or more organic UV-screening agent(s) and/or one or more inorganic UV-screening (nano)pigment(s).
- 25 12. The atomizer/aerosol dispenser as defined by Claim 11, said at least one vaporizable sunscreen composition comprising one or more organic UV-screening agent(s) selected from the group consisting of anthranilates; cinnamic derivatives; dibenzoylmethane derivatives; salicylic derivatives, camphor derivatives; triazine derivatives; benzophenone derivatives;  $\beta,\beta'$ -diphenyl acrylate derivatives,

benzotriazole derivatives, benzimidazole derivatives; imidazolines; bisbenzoazolyl derivatives; p-aminobenzoic acid (PABA) derivatives; methylenebis(hydroxyphenylbenzotriazole) derivatives; benzoxazole derivatives; screening polymers and screening silicones; dimers derived from  $\alpha$ -alkylstyrene; 4,4-diarylbutadiene derivatives and mixtures thereof.

13. The atomizer/aerosol dispenser as defined by Claim 12, said at least one vaporizable sunscreen composition comprising one or more organic UV-screening agent(s) selected from the group consisting of Ethylhexyl Salicylate, Ethylhexyl Methoxycinnamate, Octocrylene, Phenylbenzimidazole Sulphonic Acid, Benzophenone-3, Benzophenone-4, Benzophenone-5, n-Hexyl 2-(4-diethylamino-2-hydroxybenzoyl)benzoate, 4-Methylbenzylidene camphor, Terephthalylidene Dicamphor Sulphonic, Disodium Phenyl Dibenzimidazole Tetra-sulphonate, 2,4,6-Tris(diisobutyl 4'-aminobenzalmalonate)-s-triazine, Anisotriazine, Ethylhexyl triazone, Diethylhexyl Butamido Triazone, Methylene bis-Benzotriazolyl Tetramethylbutylphenol, Drometrizole Trisiloxane, Polysilicone-1,1-dicarboxy (2,2'-diméthyl-propyl)-4,4-diphénylbutadiène, 2,4-bis-[5-1(diméthylpropyl)benzoxazol-2-yl-(4-phenyl)-imino]-6-(2-ethylhexyl)-imino-1,3,5-triazine and mixtures thereof.

14. The atomizer/aerosol dispenser as defined by Claim 11, said at least one vaporizable sunscreen composition comprising one or more coated or uncoated metal oxide (nano)pigment(s).

15. The atomizer/aerosol dispenser as defined by Claim 14, said at least one vaporizable sunscreen composition comprising one or more (nano)pigment(s) of titanium, iron, zinc, zirconium or cerium.

16. The atomizer/aerosol dispenser as defined by Claim 2, said at least one UV-sunscreen comprising from 0.1 % to 30% by weight of said at least one vaporizable sunscreen composition.

5 17. The atomizer/aerosol dispenser as defined by Claim 2, said at least one UV-sunscreen comprising from 0.5% to 15% by weight of said at least one vaporizable sunscreen composition.

10 18. The atomizer/aerosol dispenser as defined by Claim 2, comprising (B) at least one propellant.

15 19. The atomizer/aerosol dispenser as defined by Claim 2, said at least one vaporizable sunscreen composition comprising at least one self- or artificial tanning agent.

20 20. The atomizer/aerosol dispenser as defined by Claim 19, said at least one self- or artificial tanning agent comprising at least one mono- or polycarbonyl compound.

25 21. The atomizer/aerosol dispenser as defined by Claim 20, said at least one self- or artificial tanning agent being selected from the group consisting of isatin, alloxan, ninhydrin, glyceraldehyde, mesotartaric aldehyde, glutaraldehyde, erythrulose, pyrazolin-4,5-dione derivatives, dihydroxyacetone (DHA), 4,4-dihydroxypyrazolin-5-one derivatives and mixtures thereof.

22. The atomizer/aerosol dispenser as defined by Claim 21, said at least one self- or artificial tanning agent comprising DHA.

23. The atomizer/aerosol dispenser as defined by Claim 19, said at least one self- or artificial tanning agent comprising from 0.1% to 10% by weight of said at least one vaporizable sunscreen composition.

5 24. The atomizer/aerosol dispenser as defined by Claim 19, said at least one self- or artificial tanning agent comprising from 0.2% to 8% by weight of said at least one vaporizable sunscreen composition.

10 25. The atomizer/aerosol dispenser as defined by Claim 2, said at least one vaporizable sunscreen composition further comprising at least one cosmetic additive or adjuvant selected from the group consisting of fatty substances, organic solvents, thickeners, demulcents, opacifiers, stabilizers, emollients, anti-foaming agents, moisturizing agents, perfumes, preservatives, polymers, fillers, sequestrants, bactericides and/or odor absorbers, alkalizing or acidifying agents, 15 surfactants, emulsifiers, anti-free radical agents, antioxidants, vitamins,  $\alpha$ -hydroxy acids and mixtures thereof.

20 26. The atomizer/aerosol dispenser as defined by Claim 2, said at least one vaporizable sunscreen composition further comprising at least one polymer of isophthalic acid or of sulphisophthalic acid.

25 27. The atomizer/aerosol dispenser as defined by Claim 26, said at least one polymer of isophthalic acid or of sulphisophthalic acid comprising a copolymer of phthalate/sulphisophthalate/glycol or a copolymer of diethylene glycol/phthalate/isophthalate/1,4-cyclohexanedimethanol.

28. The atomizer/aerosol dispenser as defined by Claim 2, said at least one vaporizable sunscreen composition comprising a simple or complex emulsion.

29. The atomizer/aerosol dispenser as defined by Claim 2, said at least one vaporizable sunscreen composition comprising an oil-in-water or water-in-oil emulsion.

5 30. A vaporizable sunscreen composition suited for pressurization into a spray of fine sunscreen particles, comprising (1) a UV-photoprotecting amount of at least one UV-sunscreen and (2) an SPF-enhancing amount of generally spherical silica microparticles, formulated into (3) a topically applicable, cosmetically acceptable carrier therefor.

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31. The vaporizable sunscreen composition as defined by Claim 30, comprising (2) an SPF-enhancing amount of generally spherical silica microparticles, formulated into (3) a topically applicable, cosmetically acceptable aqueous carrier therefor.

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32. The vaporizable sunscreen composition as defined by Claim 31, said generally spherical porous silica microparticles having a mean particle size ranging from 0.5  $\mu\text{m}$  to 20  $\mu\text{m}$ .

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33. The vaporizable sunscreen composition as defined by Claim 32, said generally spherical porous silica microparticles having a mean particle size ranging from 3  $\mu\text{m}$  to 15  $\mu\text{m}$ .

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34. The vaporizable sunscreen composition as defined by Claim 32, said generally spherical porous silica microparticles having a specific surface ranging from 50  $\text{m}^2/\text{g}$  to 1000  $\text{m}^2/\text{g}$

35. The vaporizable sunscreen composition as defined by Claim 34, said generally spherical porous silica microparticles having a specific surface ranging from 150 m<sup>2</sup>/g to 800 m<sup>2</sup>/g.

5 36. The vaporizable sunscreen composition as defined by Claim 34, said generally spherical porous silica microparticles having a specific pore volume ranging from 0.5 ml/g to 5 ml/g.

37. The vaporizable sunscreen composition as defined by Claim 36, said  
10 generally spherical porous silica microparticles having a specific pore volume ranging from 1 ml/g to 2 ml/g.

38. The vaporizable sunscreen composition as defined by Claim 31, said generally spherical porous silica microparticles comprising from 0.1% to 10%  
15 weight of said at least one vaporizable sunscreen composition.

39. The vaporizable sunscreen composition as defined by Claim 31, said generally spherical porous silica microparticles comprising from 0.2% to 5% weight of said at least one vaporizable sunscreen composition.

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40. The vaporizable sunscreen composition as defined by Claim 31, said at least one vaporizable sunscreen composition comprising one or more organic UV-screening agent(s) and/or one or more inorganic UV-screening (nano)pigment(s).

25 41. The vaporizable sunscreen composition as defined by Claim 40, said at least one vaporizable sunscreen composition comprising one or more organic UV-screening agent(s) selected from the group consisting of anthranilates; cinnamic derivatives; dibenzoylmethane derivatives; salicylic derivatives, camphor derivatives; triazine derivatives; benzophenone derivatives;  $\beta,\beta'$ -diphenyl acrylate

derivatives, benzotriazole derivatives, benzimidazole derivatives; imidazolines;  
bisbenzoazolyl derivatives; p-aminobenzoic acid (PABA) derivatives;  
methylenabis(hydroxyphenylbenzotriazole) derivatives; benzoxazole derivatives;  
screening polymers and screening silicones; dimers derived from  $\alpha$ -alkylstyrene;  
5 4,4-diarylbutadiene derivatives and mixtures thereof.

42. The vaporizable sunscreen composition as defined by Claim 41, said at  
least one vaporizable sunscreen composition comprising one or more organic UV-  
screening agent(s) selected from the group consisting of Ethylhexyl Salicylate,  
10 Ethylhexyl Methoxycinnamate, Octocrylene, Phenylbenzimidazole Sulphonic  
Acid, Benzophenone-3, Benzophenone-4, Benzophenone-5, n-Hexyl 2-(4-  
diethylamino-2-hydroxybenzoyl)benzoate, 4-Methylbenzylidene camphor,  
Terephthalylidene Dicamphor Sulphonic, Disodium Phenyl Dibenzimidazole  
Tetra-sulphonate, 2,4,6-Tris(diisobutyl 4'-aminobenzalmalonate)-s-triazine,  
15 Anisotriazine, Ethylhexyl triazone, Diethylhexyl Butamido Triazone, Methylene  
bis-Benzotriazolyl Tetramethylbutylphenol, Drometrizole Trisiloxane,  
Polysilicone-1,1-dicarboxy (2,2'-diméthyl-propyl)-4,4-diphénylbutadiène, 2,4-bis-  
[5-(diméthylpropyl)benzoxazol-2-yl-(4-phenyl)-imino]-6-(2-ethylhexyl)-imino-  
1,3,5-triazine and mixtures thereof.

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43. The vaporizable sunscreen composition as defined by Claim 40, said at  
least one vaporizable sunscreen composition comprising one or more coated or  
uncoated metal oxide (nano)pigment(s).

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44. The vaporizable sunscreen composition as defined by Claim 43, said at  
least one vaporizable sunscreen composition comprising one or more  
(nano)pigment(s) of titanium, iron, zinc, zirconium or cerium.



45. The vaporizable sunscreen composition as defined by Claim 31, said at least one UV-sunscreen comprising from 0.1 % to 30% by weight of said at least one vaporizable sunscreen composition.

5 46. The vaporizable sunscreen composition as defined by Claim 31, said at least one UV-sunscreen comprising from 0.5 % to 15 % by weight of said at least one vaporizable sunscreen composition.

47. The vaporizable sunscreen composition as defined by Claim 31, said at  
10 least one vaporizable sunscreen composition comprising at least one self- or artificial tanning agent.

48. The vaporizable sunscreen composition as defined by Claim 47, said at  
15 least one self- or artificial tanning agent comprising at least one mono- or polycarbonyl compound.

49. The vaporizable sunscreen composition as defined by Claim 48, said at least one self- or artificial tanning agent being selected from the group consisting of isatin, alloxan, ninhydrin, glyceraldehyde, mesotartaric aldehyde,  
20 glutaraldehyde, erythrulose, pyrazolin-4,5-dione derivatives, dihydroxyacetone (DHA), 4,4-dihydroxypyrazolin-5-one derivatives and mixtures thereof.

50. The vaporizable sunscreen composition as defined by Claim 49, said at least one self- or artificial tanning agent comprising DHA.

25 51. The vaporizable sunscreen composition as defined by Claim 47, said at least one self- or artificial tanning agent comprising from 0.1 % to 10 % by weight of said at least one vaporizable sunscreen composition.

52. The vaporizable sunscreen composition as defined by Claim 47, said at least one self- or artificial tanning agent comprising from 0.2% to 8% by weight of said at least one vaporizable sunscreen composition.

5 53. The vaporizable sunscreen composition as defined by Claim 31, said at least one vaporizable sunscreen composition further comprising at least one cosmetic additive or adjuvant selected from the group consisting of fatty substances, organic solvents, thickeners, demulcents, opacifiers, stabilizers, emollients, anti-foaming agents, moisturizing agents, perfumes, preservatives,  
10 polymers, fillers, sequestrants, bactericides and/or odor absorbers, alkalinizing or acidifying agents, surfactants, emulsifiers, anti-free radical agents, antioxidants, vitamins,  $\alpha$ -hydroxy acids and mixtures thereof.

15 54. The vaporizable sunscreen composition as defined by Claim 31, said at least one vaporizable sunscreen composition further comprising at least one polymer of isophthalic acid or of sulfoisophthalic acid.

20 55. The vaporizable sunscreen composition as defined by Claim 54, said at least one polymer of isophthalic acid or of sulfoisophthalic acid comprising a copolymer of phthalate/sulfoisophthalate/glycol or a copolymer of diethylene glycol/phthalate/isophthalate/1,4-cyclohexanedimethanol.

25 56. The vaporizable sunscreen composition as defined by Claim 31, said at least one vaporizable sunscreen composition comprising a simple or complex emulsion.

57. The vaporizable sunscreen composition as defined by Claim 31, said at least one vaporizable sunscreen composition comprising an oil-in-water or water-in-oil emulsion.

58. A regime or regimen for UV-photoprotecting the skin and/or hair against the damaging effects of UV radiation, comprising spraying thereon an effective amount of fine sunscreen particles pressurized from the vaporizable sunscreen composition as defined by Claim 30.

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59. A regime or regimen for UV-photoprotecting the skin and/or hair against the damaging effects of UV radiation, comprising spraying thereon an effective amount of fine sunscreen particles pressurized from the vaporizable sunscreen composition as defined by Claim 31.